Temperament and Personality in Bariatric Surgery – Resisting Temptations?

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Abstract

Temperament and personality traits can serve as both risk factors as well as protective factors in the development of morbid obesity. In the present review, we present an overview of studies focusing on the relationship between temperament/personality and morbid obesity in pre- and postoperative bariatric surgery patients. We consider studies which focus on both a categorical and dimensional point of view on temperament/personality, as well as studies based on cross-sectional and longitudinal designs. Finally, we will integrate the research findings, discuss the implications for assessment and treatment and formulate suggestions for future research.

Introduction

Temperament and personality traits play an important role as risk factors as well as protective factors in the development of (morbid) obesity (Gerlach, Herpertz, & Loeber, 2015). The relationship between temperament/personality and (morbid) obesity can be threefold: (a) temperament/personality traits can be considered as risk factors for the development of morbid obesity; (b) the co-occurrence of particular temperament/personality traits and morbid obesity can be the result of a third common factor (e.g., traumatic experiences in the past); or (c) being morbidly obese can influence the manifestation of temperament/personality traits (Gerlach, Herpertz, & Loeber, 2015). Moreover, temperament/personality features are thought to influence the outcomes of weight loss treatments, particularly with regard to weight loss and weight loss maintenance following bariatric surgery.

The aim of this narrative review is to present the current state of research on the relationship between personality traits in pre- and post-operative BARIATRIC SURGERY patients. This chapter will examine both categorical and dimensional personality features. All studies are ordered according to the personality/temperament model which is applied in the particular studies, and cross-sectional studies precede the longitudinal studies. Finally, we will integrate the research findings, discuss their

implications for the treatment of bariatric surgery patients and offer some suggestions for future research.

DSM Axis II Personality Disorders

Black et al. (1992) summarized the findings of 15 studies which assessed the prevalence of personality disorders in morbidly obese individuals between 1960 and 1990, and concluded that the rates for personality disorders varied widely, ranging from 15% to 83%. In their own study, Black et al. (1992) assessed 88 morbidly obese individuals who requested vertical banded gastroplasty by means of the Structured Interview for DSM-III Personality Disorders (Spitzer et al., 1990) and compared them with age and gender-matched controls. Morbidly obese individuals were significantly more likely than individuals in the comparison group to manifest Cluster A (17.4%), Cluster B (43.5%) (especially borderline), and Cluster C (47.8%) (especially avoidant and passive-aggressive) personality disorders. Overall, 72% of the morbidly obese individuals met criteria for at least one personality disorder, compared with only 37% of the comparison individuals. Herpertz et al. (2003, 2004) summarized the findings of studies on personality disorders (DSM-III, DSM-III-R) in pre-surgery patients published between 1980 and 2002, and concluded that Axis II personality disorders in bariatric surgery candidates ranged between 22% and 24%. More recently, Malik et al. (2014) summarized the findings of two studies (Kalarchian et al., 2007; Mauri et al., 2008) who investigated the prevalence of DSM-IV personality disorders in pre-surgery patients by means of the Structured Clinical Interview for DSM-IV Axis II Disorders (SCID II; First et al., 1997). The overall prevalence of Axis II personality disorders in the sample of Mauri et al. (2008) was 19.5%, and in the sample of Kalarchian et al. (2007) was 28.5%. Cluster C (especially avoidant and obsessive-compulsive) and Cluster B (especially borderline) personality disorders were most common in both studies. The presence of Axis II personality disorders in pre-surgery patients was associated with lower functional health status (both physical and emotional) but not with BMI.

Powers et al. (1997) investigated 130 patients before and 2 years after bariatric surgery and at follow-up (5.7 years after surgery). Thirty-two individuals (24%) suffered from pre-existing Axis II personality disorders. There was no relationship between the presence of a pre-surgical Axis II diagnosis and total weight loss or net change in BMI at follow-up. Similarly, there was no statistically significant relationship between pre-existing Axis II diagnoses and overall mental health, mood or mood swings at follow-up (Powers et al., 1997).

Dimensional Personality Models

An overview of all studies which apply dimensional personality models while investigating bariatric surgery patients is displayed in Table 1.

Minnesota Multiphasic Personality Inventory-2 (Restructured Form) [MMPI-2-(RF)]

Previous studies investigating bariatric surgery candidates with the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher et al., 2001) reported mixed results regarding the psychological adjustment of bariatric surgery candidates (Wygant et al., 2007). Maddi et al. (1997) examined MMPI-2 profiles of 1027 bariatric surgery candidates and found mean profiles characterized by moderate elevations on three scales: 1) hypochondriasis, 2) depression, and 3) hysteria. These findings were replicated by Kinder et al. (2008). Maddi et al. (2001) examined post-surgery adjustment and found that patients exhibited the most significant reductions on these 3 scales, six to twelve months after surgery (Wygant et al., 2007). Tsushima et al. (2004) finally compared MMPI-2 profiles of patients who lost less or more than 50% of their excess body weight. The found that patients who lost <50% excess weight scored significantly higher on the hysteria, paranoia, health concerns, and the infrequency (F) scales and significantly lower on the masculinity/femininity scale compared to those who lost >50% excess weight (Wygant et al., 2007).

Marek et al. (2013) investigated 1025 consecutive patients seeking bariatric surgery by means of the Minnesota Multiphasic Personality Inventory-2 Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011). Bariatric surgery candidates produced mean MMPI-2-RF validity and substantive

scale scores that were within normal limits, with the exception of above-average scores on malaise (i.e., preoccupied with poor health). Marek et al. (2014) explored associations between pre-surgical MMPI-2-RF and early post-operative somatic concerns, psychological distress, and maladaptive eating behaviors at 1- and 3-month post-operative appointments. Negative Emotionality was positively related with psychological distress at month 1 and month 3 and with somatic concerns and maladaptive eating behaviors at month 3.

Millon Clinical Multiaxial Inventory (MCMI)

Belanger et al. (2010) investigated 143 bariatric surgery candidates by means of the Millon Clinical Multiaxial Inventory-III (MCMI-III; Millon, 1994) at baseline and their percent weight loss at 1 month, 2, 3 and 6 months post-surgery. The results indicate that higher scores on the schizotypal and schizoid scales and lower scores on the compulsive scale were related to greater weight loss at these respective follow-up points.

Guisado et al. (2003) compared MCMI-II (Millon, 1987) personality characteristics of 100 patients after vertical banded gastroplasty with a Spanish clinical population. Patients after VBG showed higher values in personality disorders (schizoid, histrionic, compulsive and paranoid) and clinical syndromes (delusional disorder) than the clinical comparison group.

Temperament and Character Inventory

De Panfilis et al. (2006) evaluated 65 morbidly obese individuals applying for laparoscopic adjustable gastric banding (LAGB) by means of the Temperament and Character Inventory (TCI; Cloninger, 1987; Cloninger, Svrakic, & Przybeck, 1993). After intake, 35 subjects were accepted for and underwent LAGB. Pre-operative persistence explained more than 40% of the variance in BMI reduction 1 year following LAGB, even after controlling for pre-operative BMI, socio-demographic variables, psychiatric comorbidity, psychopathology severity and other TCI scales. Similar findings were reported

by Gordon et al. (2014) who assessed 333 adult patients who had Roux-en-Y gastric bypass (RYGB) surgery by means of the TCI. Percent of excess weight loss (%EWL) was measured after surgery at 6 months, 1 year, 2 years and on the last clinical observation. Follow-up at 2 years and on the last clinical observation showed that lower scores on the persistence scale and lower body dissatisfaction before surgery predicted lower %EWL (Gordon, Sallet, & Sallet, 2014). Leombruni et al. (2007) assessed 38 severely obese patients who underwent laparoscopic vertical banded gastroplasty (VBG) before surgery and 6 months after surgery with the TCI. Regarding the reduction in BMI, a greater weight loss was associated with a higher self-directedness in the pre-surgical TCI. It is likely that subjects with higher scores in self-directedness are more able to adjust their behavior to achieve weight loss and to have more realistic expectations regarding therapeutic interventions.

(Precursors of) Big Five Model

Wickramasekera and Price (1997) compared 70 morbidly obese candidates for gastric surgery and 76 matched normal weight controls by means of the Eysenck Personality Inventory (Eysenck & Eysenck, 1968). The results showed that the obese patients scored significantly higher on neuroticism compared to the matched controls. Abilés et al. (2008) compared 50 severely obese patients and 25 normal-weight volunteers by means of the Eysenck Personality Questionnaire-Revised (EPQ-R, Eysenck, 1995). Obese patients scored significantly higher on neuroticism compared to the normal weight controls; however, on the extraversion and psychoticism scales no differences were found between groups.

Pavan et al. (2012) also administered the NEO Five Factor Inventory (NEO-FFI; Digman, 1990) to 70 obese patients referred to the outpatient unit for obesity-related lipodystrophism, seeking lipostructuring surgery (liposuction or abdominoplasty) and 33 healthy controls. Obese individuals reported higher scores on conscientiousness and lower scores on **o**penness compared to healthy controls.

Claes et al. (2013) performed a cluster analysis on data of the NEO-FFI of 102 bariatric surgery candidates and found two clusters. Patients who belonged to the emotionally dysregulated/undercontrolled cluster, scored significantly higher on neuroticism and significantly lower on extraversion/conscientiousness compared to patients of the resilient cluster. Emotionally dysregulatied/undercontrolled patients showed more binge eating presumably driven by emotional and external triggers, more psychological complaints (depression, anxiety) and more maladaptive coping reactions than resilient patients.

Canetti, Berry and Elizur (2009) investigated 44 bariatric surgery patients and 47 participants of a diet group by means of the NEO-FFI neuroticism scale before and 1 year after treatment. In the bariatric surgery group, neuroticism was not significantly associated with weight loss, an improvement in quality of life and mental health at follow-up. However, neurotic predisposition, a latent variable indicated by neuroticism, low self-esteem, and fear of intimacy, had a negative effect on weight loss that was fully mediated by emotional eating.

Dutch Personality Questionnaire

Van Hout et al. (2006) compared 153 candidates for ventrical banded gastroplasty (VBG) with normative data using the Dutch Personality Questionnaire (DPQ; Luteijn, Starren, & van Dijk, 2000). Candidates for VBG scored significantly lower on self-esteem and rigidity compared to normative data; however, on neuroticism, no significant difference emerged. In 2008, Van Hout et al. (2008) investigated early post-operative psychological functioning of 104 patients who underwent VBG, at 6, 12 and 24 months after the intervention. Initial improvement in neuroticism at 6 month, measured by the Dutch Personality Questionnaire, did not persist at 12 and 24 months. Finally, van Hout et al. (2009) investigated personality predictors of weight loss and quality of life 2 years after VBG. They were not able to find personality predictors of %EWL at 2 years follow-up. Similar findings were reported by Larsen et al. (2004) who investigated 168 patients who underwent LAGB banding by means of the Dutch Personality Questionnaire and concluded that none of the personality variables was associated

with weight outcome at short-term and long-term (24 or more months after surgery) follow-up (except egoism, which was associated with less weight loss in long-term follow-up).

Karolinksa Scales of Personality (KSP)

Rydén et al. (2003, 2004) collected longitudinal data on personality within the Swedish Obese Subjects (SOS) study in a relatively large sample. They assessed 1380 surgical candidates, 1241 conventionally-treated patients and 1135 subjects from the Swedish Obese Subjects reference study by means of 7 of the 15 scales from the Karolinska Scales of Personality (KSP; Klinteberg, Schalling, & Magnusson, 1990: somatic anxiety, muscular tension, psychoastenia, psychic anxiety, monotony avoidance, impulsiveness and irritability) prior to treatment and after 2-years. At baseline, patients reported more anxiety (somatic anxiety, muscular tension, psychoastenia, psychic anxiety), more impulsiveness and more irritability and less monotony avoidance than the conventionally-treated group and the reference group. At follow-up (in the surgical candidates), it was found that anxiety proneness decreased and monotony avoidance increased with increasing weight loss; whereas impulsivity did not change. Differences between surgically treated and the reference group decreased on all scales except impulsiveness.

Behavioral Inhibition Scale (BIS), Behavioral Activation Scale (BAS) & Effortful Control Scale (ECS

Müller et al. (2012) compared 90 extremely obese prebariatric surgery patients with and without binge eating symptomatology by means of the BIS/BAS scales (Carver & White, 1994) and the ECS (Rothbart, Ahadi, & Evans, 2000). Binge eating symptomatology was measured with the corresponding items of the German version of the Eating Disorder Questionnaire (Hilbert & Tuschen-Caffier, 2006). Regular binge eating was defined as 8 or more objective binge eating episodes during the past 28 days. Patients reporting regular binge eating did not differ from patients without binge eating on BIS (anxiety) and BAS (impulsivity); however, individuals with regular binge eating exhibited more pathological scores with regard to effortful control. In another study, Müller et al. (2014)

investigated temperament subtypes in 156 bariatric surgery candidates by means of the BIS/BAS Scales and the ECS. The latent profile analysis revealed an emotionally dysregulated/undercontrollled cluster which scored significantly higher on BIS/BAS scales and significantly lower on the **ECS** compared to a resilient/high functioning cluster. Patients of the emotionally dysregulated/undercontrolled cluster showed more eating disorder, depressive and ADHD symptoms than patients of the resilient/high functioning cluster.

Georgiadou et al. (2014) investigated self-reported BAS (impulsivity) in 50 pre- and 50 post-surgery (RYGP) patients by using a comparative cross-sectional design. However, no group differences were found with regard to self-reported BAS (impulsivity) scores.

Discussion

Based on this literature overview, it is difficult to draw firm conclusions concerning the relationship between personality disorders/traits and morbid obesity before and after bariatric surgery. If we try to summarize this complex information, we can conclude that studies which focus on personality prototypes (combinations on different temperament/personality traits) generally show that the group of preoperative bariatric surgery patients is heterogeneous. These studies (Claes et al., 2013; Müller et al., 2014) revealed two temperament/personality prototypes in preoperative bariatric surgery patients: a resilient/high functioning group without personality deficits, and an emotionally dysregulated/undercontrolled group characterized by high scores on neuroticism/BIS and low scores on conscientiousness/effortful control. The latter group is characterized by higher scores on depression, anxiety and more binge eating (disorder) symptoms. This personality prototype can also be related to Cluster C (high Neuroticism) and Cluster B (high Neuroticism/Low Conscientiousness) psychopathology which seems to be more prevalent in pre-surgery bariatric patients. It appears that high neuroticism and low conscientiousness/high impulsivity make some patients more vulnerable to emotional dysregulation and impulsivity, and can lead to emotional eating presumably to deal with

negative affect, particularly certainly in those with low effortful control, which is necessary to resist this temptation of food.

Additionally, the predictive value of temperament/personality traits in the prediction of weight loss/quality of life after bariatric surgery is also limited (see also Gerlach, Herpertz, & Loeber, 2015). It seems that the presence of persistence and self-directedness have a positive influence on weight loss after bariatric surgery. People high on persistence and self-directedness are probably more likely to exhibit life-style changes required for weight loss and weight loss maintenance after bariatric surgery (De Panfilis et al., 2006; Gordon, Sallet, & Sallet, 2014). Additionally, some studies show that neuroticism and/or anxiety decrease at least temporarily after bariatric surgery (e.g., Maddi et al., 2001; Ryden et al., 2004; Van Hout et al., 2008); whereas impulsivity does not differ between pre- and post-surgery patients (Georgiadou et al., 2014; Ryden et al., 2004). The fact that impulsivity does not seem to change after bariatric surgery, may make these patients more vulnerable to loss of control over eating (LOC eating) which in turn increases the risk for less weight loss and/or more weight regain (Meany, Conceiçao, & Mitchell, 2014; White et al., 2010).

Finally, future research should focus on longitudinal studies with long-term follow-ups examining larger samples of pre-bariatric surgery patients, who are assessed by means of the same personality measures, to detect high-risk patients for whom referral to mental health professionals may well be appropriate. Moreover, special emphasis should be placed on the development of well-coordinated bariatric aftercare procedures by multidisciplinary teams. At the moment, it seems that particular patients characterized by neuroticism and low persistence/low self-directedness and high impulsivity form a particularly vulnerable group, who conceivably could gain from emotion- and impulse-regulation training in a post-bariatric follow-up program to optimize post-operative weight outcomes and to reduce the risk of eating disturbances and general psychopathology following surgery.

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